Topic 04 – Valvular heart disease and general cardiology

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Multimodal Assessment of the Aortic Annulus Diameter. Implications for Transcatheter Aortic Valve Implantation

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Objectives: We sought to compare three modalities of measurements of the aortic annulus, transthoracic (TTE), transesophageal echocardiography (TEE), and multislice computed tomography (MSCT), and to evaluate their potential clinical impact on transcatheter aortic valve implantation (TAVI) strategy.

Background: TAVI is an alternative to surgery for high-risk patients with severe aortic stenosis (AS). Exact measurement of the aortic annulus is critical for appropriate patient's selection and successful implantation.

Methods: Annulus diameter was measured using TTE, TEE and MSCT in 45 consecutive patients with severe AS, referred for TAVI. TAVI was performed using a balloon expendable valve (Edwards-Sapien). The TAVI strategy (decision to implant and choice of the prosthesis' size) was based on manufacturer's recommendations.

Results: Correlations between methods were good but absolute difference between MSCT and TTE (1.22±1.3 mm) or TEE (1.52±1.1 mm) was significantly larger than the absolute difference between TTE and TEE (0.6±0.8 mm, p=0.03 and p<0.0001 respectively). As regard to TAVI strategy, agreement between TTE and TEE was good overall (Kappa 0.68) but the TAVI strategy would have been different in 8 patients (17%). Agreement between MSCT and TTE or TEE was only modest (Kappa 0.28 and 0.27) and a decision based on MSCT measurements would have modified the TAVI strategy in a large number of patients (40% and 42%). Implantation was performed in 34 patients (76%) based on TEE measurements and was successful in all but one patient who had a grade 3 aortic regurgitation.

Conclusions: In this group of patients with AS referred for TAVI, measurements of the aortic annulus using TTE, TEE and MSCT were close but not identical and the method used has important potential clinical implications on TAVI strategy. In the absence of gold standard, a strategy based on TEE measurements provided good clinical results.

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Characteristics, management and one-year outcome of patients hospitalized for severe aortic stenosis in a contemporary era

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Purpose: We evaluate clinical characteristics, management and prognosis of patients (Pts) with severe aortic stenosis (AS) hospitalized in a university hospital offering all therapeutic options: AVR, balloon aortic valvuloplasty (BAV) and transcutaneous heart valve implantation (TAVI) using the Edwards Sapien bioprosthesis.

Methods: We included 211 Pts with severe AS (EOA < 1 cm^2 and/or 0.6 cm^2/m^2), hospitalised between July, 2006 and July, 2007 in our center. Clinical, echocardiographic and angiographic characteristics, logistic EuroSCORE and STS score were evaluated. A prospective clinical and echocardiographic follow-up was performed at 1-year.

Results: 211 Pts (79 ± 9 years; 53% female) were included in the study. 58% of Pts were > 80 years old. 65% of Pts were highly symptomatic (NYHA 3-4). After multidisciplinary evaluation, 92 (43.6%) patients were referred to surgical AVR, 20 (9.5%) to TAVI, 62 (29.4%) to BAV and 37 (17.5%) were maintained on medical treatment alone. Pts treated by AVR were younger (74+/-9 vs 84+/-5, p< .0001) and had less frequent history of myocardial infarction (p=0.003) or coronary artery bypass grafts (p=0.0002), less renal failure (p<0.001), less severe lung disease (p=0.009), and less demetia (p=0.0002) than the 3 other groups. Operative risk was lower in the AVR group as assessed by Euroscore (8% vs 25%, p< .0001) and STS score (4.4 vs 13.0%, p< .0001). At one year, survival was excellent in the AVR group (99%) with no procedural death. At the opposite, 51% of Pts treated medically died. BAV improved symptoms (24% in NYHA IV vs 58% at baseline) and survival was 66% at 1-year. Survival rate in the TAVI group was 79% with marked symptoms improvement (70% of Pts in NYHA 1-2 vs 1% at baseline).

Conclusions: Patients with severe AS represent a very heterogeneous population. Surgical AVR remains the reference treatment with excellent results. However, TAVI is a promising alternative treatment in many Pts with heavy and multiple comorbidities.

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Stentless Aortic Valve bioprosthesis Dehiscence – A Possible Infective Endocarditis with Atypical Presentation but Serious Consequences

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Background: We recently reported an atypical possible prosthetic valve infective endocarditis (PVIE) occurring on a stentless Cryolife O'Brien® aortic bioprosthesis without inflammatory markers, negative blood cultures but anatomic damage suggestive of IE and aimed to look for other cases.

Methods: We reviewed all cases of possible or definite aortic PVIE according to the modified Duke criteria hospitalized in our institution between January 2002 and March 2008.

Results: 60 patients with possible or definite aortic PVIE were admitted during this period (26 mechanical prosthesis, 11 stented bioprosthesis and 23 stentless Cryo-Life O'Brien® bioprosthesis). Compared to mechanical or stented prosthesis, patients with stentless valve presented less frequently with fever (39% vs. 77% and 91%, p=0.003), tended to present more frequently in congestive heart failure (54% vs. 23% and 36%, p=0.10), less frequently with positive blood cultures (44% vs. 65% and 82%, p=0.08) and with lower CRP levels (69±70 mg/L vs. 144±106 mg/L and 145±123 mg/L, p=0.02). Patients with stentless valve also presented less frequently with vegetations (22% vs. 58% and 63%, p=0.01) but more frequently with valve dehiscence (68% vs. 23% and 22%, p=0.006) and severe aortic regurgitation (65% vs. 23% and 36%, p=0.01). 40 patients were operated on within 30 days, more frequently in the stentless group (83% vs. 61% and 45% respectively, p=0.07). Compared to the previously reported incidence of stentless PVIE at our institution (1.5%), we observed a striking increase incidence after 2004 (>7%).

Conclusion: We report a frequent and atypical clinical and microbiological presentation of possible PVIE occurring on stentless bioprosthesis and a striking increased incidence after 2004 which corresponds to changes in the manufacturing process. Clinicians should be aware of this atypical clinical presentation. The stentless Cryo-Life O'Brien ® bioprosthesis is not anymore implanted at our institution.

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Circularity Index of deployed Edwards Sapien aortic valve bioprosthesis

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